# TCC Southeast Campus

## Practice Accuplacer Math Placement Test

## Trigonometry & Pre-Calculus Level Test:

1. Determine the domain of the function f = $\{(-1,1),(1,1),(2,6)\}$

   A. $\{-1,1,2\}$

   B. $\{-1,1\}$

   C. $\{1,6\}$

   D. $\{all\ reals\}$

2. If $x^2+1$ is a factor of $f(x)$. Which of the following is TRUE?

   A. $f(-1)=0$

   B. $f(x)$ has a y-intercept of -1

   C. $f(i)=0$ where $i=\sqrt{-1}$

   D. $f(x)$ has an x-intercept of 1

3. Which of the following is NOT equal to zero?

   A. $\cos\left(\frac{\pi}{2}\right)$

   B. $\tan(0°)$

   C. $\cos\left(\frac{\pi}{4}\right)-\sin\left(\frac{\pi}{4}\right)$

   D. $\sin^{-1}(\pi)$

4. If $f(x)=2x+9$ and $g(x)=16-x^2$, then what would be the value of $f\left(f^{-1}(3)\right)$.

   A. 23 B. 3 C. -6 D. $2\sqrt{3}+9$

5. For what real numbers $x$ is $3x^2+5x-2$ positive?

A. $\left(-2,\frac{1}{3}\right)$

B. $(-\infty,-2) and \left(\frac{1}{3},\infty\right)$

C. $(-\infty,-2)$

D. $\left(-\infty,\frac{1}{3}\right) and\ (-2,\infty)$

6. Which of the following best describes the set $\{(3,2),(-1,5),(5,7),(2,6),(4,-6)\}$.

A. finite set
B. one-to-one function
C. function
D. A, B, and C

7. Determine the value of $x$ in the geometric sequence $\left\{1,-\frac{2}{3},\frac{4}{9},-\frac{8}{27},x\right\}$.

A. $\frac{12}{36}$ B. $-\frac{12}{36}$ C. $-\frac{16}{81}$ D. $\frac{16}{81}$

8. If $f(x)=(x-a)(x+b)^4(x+c)^3$ and $a,b,c>0$, which of the following are true?

(i) $f(x)$ has degree 8

(ii) $f(x)$ crosses the x-axis at $x=-c$

(iii) the graph of $y=f(x)$ touches, but does not cross, the x-axis at $x=-b$

A. i B. i, ii, iii C. i, ii D. i, iii

9. Find a polynomial $f(x)$ of degree 3, with leading coefficient 1, which has zeros 1, -2, and 3. The coefficient of the $x^2$ term is

A. -2 B. 2 C. -6 D. 6

10. If $\theta$ is in standard position and P(-3, -4) is on the terminal side, find $\sin\theta + \tan\theta$.

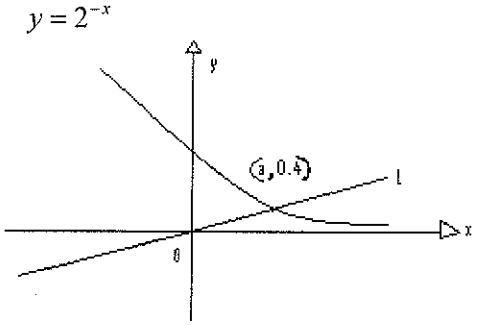
A. $-\frac{7}{5}$ B. $\frac{8}{5}$ C. $\frac{8}{15}$ D. $\frac{5}{8}$

11. The functions $f$ and $g$ are defined below. What are all values of $x$ for which $f(x) < g(x)$?

$$f(x) = x(x-1)$$
$$g(x) = x$$

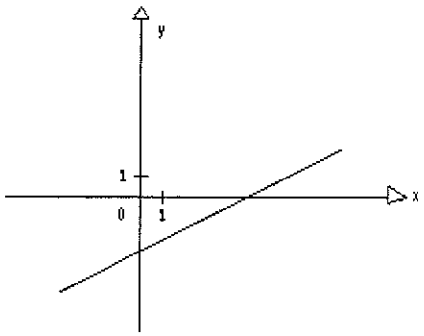
A. $x < 0$ or $x > 1$
B. $x < 0$ or $x > 2$
C. $0 < x < 1$
D. $0 < x < 2$

12. In the figure below, line L passes through the origin and intersects the graph of $y = 2^{-x}$ at the point (a, 0.4). What is the slope of line L?




A. 0.200 B. 0.303 C. 0.528 D. 1.322

13. The equation of the line shown in the graph below is $y = ax + b$. Which of the following is always true for this line?




A. $ab < 0$ B. $ab > 0$ C. $ab = 0$ D. $a = -b$

14. If P (2, 1) is a **point on the graph** of the function $f$, find the corresponding point on the graph of $y = -f(x+2) + 3$.

A. (0, 2) B. (-2,-3) C. (-2, 1) D. (0, 3)

15. For the following expression below, write an equivalent expression that involves $x$ only.

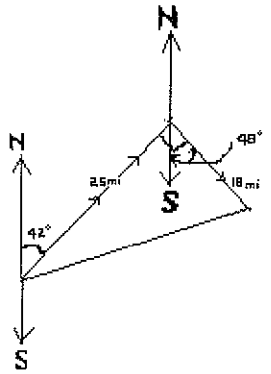
$$\cos(\sin^{-1} x)$$

A. $x$ B. $\frac{1}{\sqrt{1-x^2}}$ C. $\sqrt{1-x^2}$ D. $\frac{x}{\sqrt{x^2+1}}$

16. If $a$ and $b$ are numbers such that $\ln a = 2.1$ and $\ln b = 1.4$, what is the value of $\ln\left(\frac{a^2}{b}\right)$?

A. 1.8 B. 3.5 C. 2.8 D. -2.8

17. A boat leaves the harbor entrance and travels 25 miles in the direction N $42°$ E. The captain then turns the boat $90°$ and travels another 18 miles in the direction S $48°$ E. At that time, how far is the boat from the harbor entrance, and what is the bearing of the boat from the harbor entrance (see figure below)?




A. $42\ mi, W\,28°\ N$
B. $80\ mi, N\,78°\ W$
C. $25\ mi, S\,78°\ E$
D. $31\ mi, N\,78°\ E$

18. Which of the following matrices does not have an inverse?

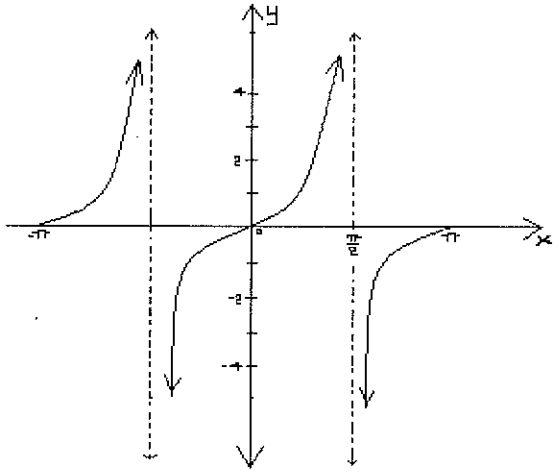
A. $\begin{bmatrix} 6 & 5 \\ 3 & 2 \end{bmatrix}$ B. $\begin{bmatrix} -1 & 2 \\ -2 & 4 \end{bmatrix}$ C. $\begin{bmatrix} 7 & 6 \\ 1 & 1 \end{bmatrix}$ D. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

19. A water wheel has a radius of 12 feet. The wheel is rotating at 20 revolutions per minute. Find the linear speed, in feet per minute, of the water.

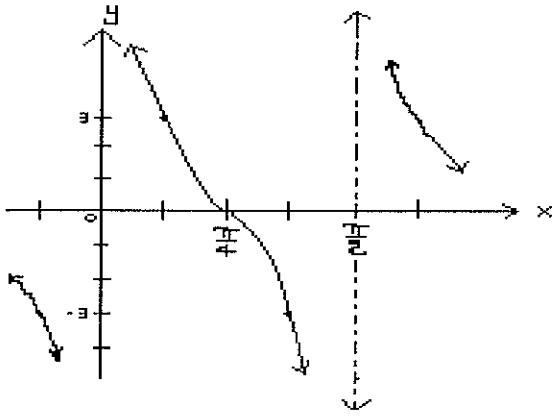
A. 1508 ft/min B. 500 ft/min C. 1300 ft/min D. 2500 ft/min

20. Graph the equation $y = 3\cot 2x$.

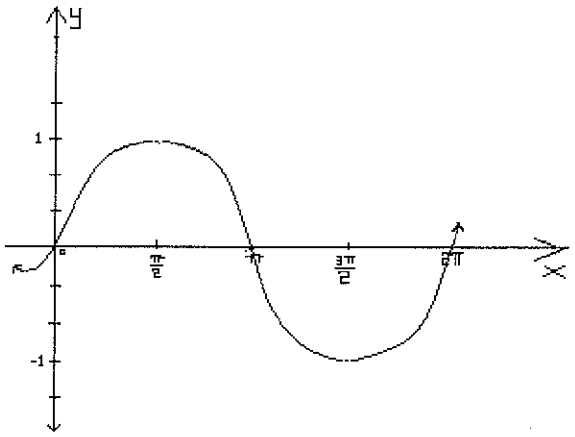
A.



B.



C.



## College Level Math Section :( Answer Key)

1. A
2. C
3. D
4. B
5. B
6. D
7. D
8. B
9. A
10. C
11. D
12. B
13. A
14. A
15. C
16. C
17. D
18. B
19. A
20. B